

darted away. But I never saw one actually strike the *Antennarius*.

This mode of attack, no doubt, explains why this fish chooses such a position as that observed by my example. Being very slow in its movements, it protects its posterior parts. Did it not do this it might be seriously injured by an *Acanthurus*. I have frequently observed my fishes fight by approaching backwards and lashing at each other with the tail. This will doubtless furnish a good reason for the formidable lateral armature of the tail in the *Acronuridae* and some other families of fishes.

## 8. A Monograph of the Genus *Taphozous*, Geoff.

By G. E. DOBSON, M.A., M.B., F.L.S., &c.

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In 1872 I published some notes on the Asiatic species of *Taphozous*, giving a short synopsis of the species, in which they were divided into two groups. Since that time I have examined the types and large collections of specimens of the species of this genus in the British Museum, in the Museum of the East-India Company, in the Leyden, Berlin, and Paris Museums, also the collection in the Liverpool Museum and that of Sir Walter Elliot (most kindly forwarded from Scotland for my examination), as well as some private collections. Adding to these the large collection in the Indian Museum, Calcutta, I have thus examined a great number of specimens of the species of this genus, including the types, and am enabled to remove some nominal species from the list, to describe in detail, and to exhibit, in tabular form, according to their natural affinities, all the species of *Taphozous*.

### TAPHOZOUS.

*Taphozous*, Geoffroy, Descript. de l'Égypte, ii. p. 126; Temminck, Monogr. Mammal. ii. p. 277 (excl. *Taphozous lepturus*, Geoff. et Temm.); Wagner, Suppl. Schreb. Säugeth. v. p. 684.

Muzzle very conical, broad behind, very narrow in front, terminated by the slightly projecting inner margins of the valvular nostrils. Crown of the head very slightly raised above the face-line: a deep frontal excavation between the eyes; ears separate, the inner margin of the conch arising by a short band from the side of the frontal concavity, the outer margin of the conch commencing in a small lobe close to the angle of the mouth but on a lower level; tragus short, narrowest opposite the base of its inner margin, expanded above; lower lip as long or slightly longer than the upper lip, terminating in front in two small triangular naked spaces separated by a more or less deep groove; eyes rather large, a distinct horizontal groove on the face beneath; thumb with a small but very acute claw; first phalanx of middle finger folded (in repose) on dorsum of metacarpal bone; foot long and slender, the outer toe as long as the middle toe, the inner

toe shortest; tail perforating the interfemoral membrane and appearing on its upper surface, capable of being partially withdrawn.

*Dentition*.—Inc.  $\frac{1-1}{4}$ ; C.  $\frac{1-1}{1-1}$ ; Pm.  $\frac{2-2}{2-2}$ ; M.  $\frac{3-3}{3-3}$ .

Premaxillaries cartilaginous, supporting a pair of small weak incisors often absent in adult animals; canines rather close together, much curved forwards, separated from the second premolar by a wide space in which the first minute premolar scarcely appears above the level of the gum; second upper premolar exceeding the molar in vertical extent; last molar consisting of a narrow transverse bony lamina; mesopterygoid fossa very narrow, the pterygoid plates terminating in long hamular processes; immediately behind, the basisphenoid is deeply excavated on either side of a narrow longitudinal bony ridge which connects the roof of the mesopterygoid fossa with the basioccipital, the excavations forming corresponding elevations on the floor of the brain-case; postorbital processes very long, connected by ligament with the zygoma, and thus completely circumscribing the orbit.

Fig. 1.



Most of the species of this genus have a peculiar glandular sac (see fig. 1) placed between the angles of the lower jaw—a sexual character; for, while always more developed in males than in females, in some species while distinct in the male it is quite absent in the female. The width of the opening of the sac is nearly equal to half the distance between the angles of the jaw; and the direction of the opening is anterior. This open *gular sac* is quite absent in both sexes in *T. melanopogon*, but about its usual position the openings of small pores may be seen, the secretion exuding from which probably causes the hairs in this situation to grow very long, forming the black beard found in many male specimens of this species.

In the greater number of species, also, a small band of integument passes from the inferior surface of the forearm near its distal extremity to the proximal extremity of the fifth metacarpal bone, forming a small pouch with the wing-membrane—the *radio-metacarpal pouch*.

This genus is limited to the tropical and subtropical regions of the Eastern Hemisphere, in which it is widely distributed. The distribution of the species is shown as follows:—

Africa and its islands . . . . .	3
North-eastern Africa and South-western Asia . .	1
Asia and Malayana . . . . .	5
Australia and New Guinea . . . . .	1

*Synopsis of Subgenera and Species.*

- I. Radio-metacarpal pouch distinct; lower lip scarcely grooved ..... Subgenus *Taphozous*.
- a.* Radio-metacarpal pouch well developed.
- a'*. No gular sac in male or female.
- a''*. Fur of the back extending upon part of the wing- and interfemoral membranes; extremity of tail thickened ..... 1. *T. melanopogon*, Temm.
- b''*. Fur of the back very narrow across loins, not extending upon the membranes; extremity of tail not thickened ..... 2. *T. theobaldi*, Dobson.
- b'*. Gular sac present in males, rudimentary or absent in females.
- c''*. Gular sac quite absent in females, throat hairy beneath.
- a'''*. Ears as long or longer than the head... 3. *T. australis*, Gould.
- b'''*. Ears shorter than the head ..... 4. *T. perforatus*, Geoff.
- d''*. Gular sac rudimentary in females, throat naked beneath.
- c'''*. Fur brown above and beneath ..... 5. *T. longimanus*, Hardw.
- d'''*. Fur brown above, and beneath neck; chest and abdomen pure white..... 6. *T. mauritanus*, Geoff.
- b.* Radio-metacarpal pouch small; fur very short, not extending to membranes ..... 7. *T. nudiventris*, Rüpp.
- II. No radio-metacarpal pouch; lower lip divided in the centre of its upper surface, and in front by a deep narrow groove ..... Subgenus *Taphonycteris*.
- a.* Ears broadly rounded off above; inner margin smooth, slightly convex above; forearm three inches or less.
- a'*. Gular sac developed (but smaller) in female also; fur dark brown above and beneath... 8. *T. saccolæmus*, Temm.
- b'*. Gular sac rudimentary in female, the margins alone developed; fur brown above, pure white beneath ..... 9. *T. affinis*, Dobson.
- b.* Ears triangular, narrowly rounded off above; inner margin papillate; forearm three and a half inches at least..... 10. *T. peli*, Temm.

*I. Radio-metacarpal pouch distinct; lower lip scarcely grooved.*Subgenus 1. *TAPHOZOUS*.1. *TAPHOZOUS MELANOPOGON*.

*Taphozous melanopogon*, Temm. Monog. Mammal. ii. p. 287; Wagner, Suppl. Schreb. Säugeth. v. p. 687; Cantor, Journ. Asiat. Soc. Beng. xv. p. 180; Dobson, Proc. Asiat. Soc. Beng. Aug. 1872, p. 153.

*Taphozous philippinensis*, Waterhouse, P. Z. S. 1845, p. 9.

No gular pouch; the openings of small pores appearing beneath the fur covering the inferior surface of the lower jaw between its angles; in some male specimens the hair in this situation is very long, forming a dense black beard. Radio-metacarpal pouch large.

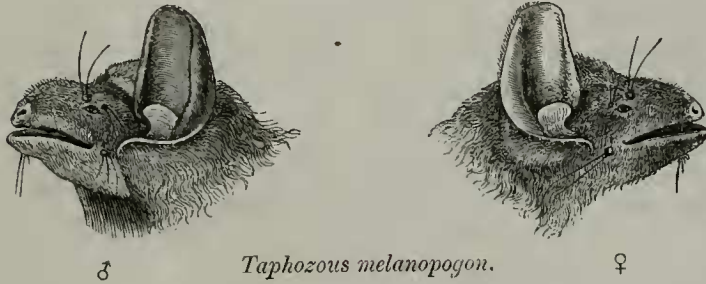
Wings from the tibiæ above the ankles.

The fur of the head extends upon the face as far as a line joining the inner corners of the eyes; the inner side of the ear-conch is

covered with a few hairs; posteriorly the ears are clothed at their bases, naked above except where a row of fine hairs fringe the outer margin.

On the upper surface the fur of the body extends upon the wing-membrane about one third the length of the humerus and femur,

Fig. 2.

*Taphozous melanopogon.*

the remainder of the wing- and antebrachial membranes are quite naked; posteriorly the interfemoral is covered thinly almost as far as the point where the tail perforates it; inferiorly, the fur of the body extends outwards upon the wing-membrane as far as a line joining the middle of the humerus and femur; beyond this, as in other species, a band of very short fine hair extends along the posterior margin of the forearm to the carpus; the feet are naked, except where a few hairs arise at the base of the claws on the backs of the terminal phalanges of the toes.

Above, the fur is white at the base, then dark-brown, the extreme tips slightly grayish; beneath, white at the base, then paler brown than on the upper surface, the extreme tips grayish. In some specimens the white at the base of the hairs beneath is not well marked.

The black beard is not always developed in the males; its development seems to depend on certain conditions as yet not known; probably it appears periodically during the rutting-season. In five male specimens in the Indian Museum this beard is well developed, while out of over one hundred specimens received by M. Milne-Edwards from Cochin China, examined by me in the Paris Museum, two only possessed the beard.

The females of this species (in which neither the black beard nor pore-openings are developed) resemble those of *T. longimanus*; they are readily distinguished, however, by the absence of the rudimentary gular sac, and by the under surface of the lower jaw being well clothed with hair, by the larger ears, and especially by the tail, which is thickened and somewhat laterally compressed towards the tip, though in every other species of the genus it tapers slightly towards its extremity.

Length: head and body 3''·1; tail 1''·0; ear 0''·85, tragus 0''·23; forearm 2''·5; thumb 0''·35; second finger—metacarp. 2''·2, 1st ph.



0''·8, 2nd ph. 0''·9; fourth finger 2''·1; tibia 0''·9; foot and claws 0''·5.

*Hab.* Bengal (Jashpur), Pinang, Burma, Cochin China, Java.

Type in the collection of the Leyden Museum.

## 2. TAPHOZOUS THEOBALDI.

*Taphozous theobaldi*, Dobson, Proc. Asiat. Soc. Beng. Aug. 1872, p. 152.

Gular sac absent in both sexes. Inner margin of the ear papillate; ears larger than in any of the species of *Taphozous*. Radio-metacarpal pouch well developed, larger than in *T. melanopogon*. Wings from the tibiæ above the ankles.

The fur of the head extends upon the face as far as a line drawn between the inner corners of the eyes, the remainder of the muzzle is nearly naked; ear-conch naked, except where a few hairs clothe the basal portion of its inner surface; posteriorly the ears are naked except at the base and along their outer margins.

On the upper surface the wing- and interfemoral membranes are quite naked, the fur being strictly limited to the body; laterally the limit of the fur upon the back is defined by a well-marked line, convex *inwards* in the lumbar region; in *T. saccolæmus* and in *T. nudiventris* the line of fur is convex *outwards* in the same situation; so that in this species the space occupied by fur in the lumbar region is narrower than in any of the other species, and appears to depend on the position of attachment of the wing-membrane. The tail has but three or four long, very fine hairs.

Inferiorly, the chin is naked as far as the anterior prolongation of the external margin of the ears; the fur of the body extends upon the wing-membrane as far as a line joining the middle of the humerus and femur; from this a band of fine hairs extends outwards to the carpus; the interfemoral membrane is naked; the backs of the toes are covered with very short hairs.

Upper incisors very short and blunt.

Length: head and body 3''·35; tail 1''·35; head 1''·15; ear (anteriorly) 1''·1, tragus 0''·28; forearm 3''·0; thumb 0''·45; second finger 4''·7; fourth finger 2''·5; tibia 1''·15; calcaneum 0''·9; foot and claws 0''·65.

*Hab.* Tenasserim Province.

Type in the collection of the Indian Museum, Calcutta.

## 3. TAPHOZOUS AUSTRALIS.

*Taphozous australis*, Gould, Mammals of Australia; Wagner, Suppl. Schreb. Säugeth. v. p. 690.

A distinct but rather small throat-sac in males, in females quite absent, the chin being covered with hairs in the position occupied by the throat-sac in the males. Ears large, as long as the head, inner margin of the ear-conch papillate; no lobule at the base of the tragus. Radio-metacarpal pouch well developed.

Wings from the ankles or tarsus. Tail slender.

The face is everywhere covered with hair, which in front of the frontal depression is very short. The fur of the back extends for a short distance upon the wing-membrane, and upon the interfemoral as far as the point perforated by the tail; the remaining part has a few short hairs. Beneath, the wing-membrane is densely covered as far as a line drawn from the middle of the humerus to the knee, the limit of the fur being strictly defined as in *T. melanopogon*. As in other species, a baud of fur passes outwards behind the forearm to the carpus.

Fur, above and beneath, white at the base, the remaining three fourths of the hairs above dark-brown, and terminal half beneath paler brown. The fur of the body rather long and dense.

Length: head and body 3".0; tail 1".3; ear 0".95, tragus 0".28; forearm 2".7; thumb 0".4; second finger—metacarp. 2".5, 1st ph. 8", 2nd ph. 1".1; fourth finger 2".45; tibia 1".05; calcaneum 0".8; foot and claws 0".45.

*Hab.* Australia, New Guinea.

Type in the collection of the British Museum.

### 3 a. TAPHOZOUS AUSTRALIS, var. FLAVIVENTRIS.

*Taphozous flaviventris* (Gould), Peters, P. Z. S. 1866, p. 430.

This appears to be a variety only of *T. australis*, differing in its greater size. Prof. Peters remarks:—"This species, represented by a single male submitted to my examination by Mr. Gould, is, although nearly related to *T. australis*, Gould, different in colour and in its superior size."

### 4. TAPHOZOUS PERFORATUS.

*Taphozous perforatus*, Geoffroy, Descript. de l'Egypte, ii. p. 126; Temm. Monog. Mamm. ii. p. 281; Wagner, Suppl. Schreb. Säugeth. v. p. 684.

Gular sac in males large, in females quite absent, chin hairy beneath; ears shorter than the head, inner margin faintly papillate. Radio-metacarpal pouch well developed.

Wings from the tibiæ, about a quarter of an inch above the ankles. Extremity of tail attenuated.

Fur short, dark-brown above and beneath, extending on both surfaces of the wing-membrane from the middle of the humerus to the middle of the femur, on the interfemoral membrane as far as the point perforated by the tail.

Length: head and body 2".95; tail 0".95; ear 0".7, tragus 0".23; forearm 2".4; thumb 0".35; second finger—metacarp. 2".2, 1st ph. 0".7, 2nd ph. 0".9; fourth finger 2".0; tibia 0".9; foot and claws 0".45.

*Hab.* Egypt.

Type in the collection of the Paris Museum.

### 5. TAPHOZOUS LONGIMANUS.

*Taphozous longimanus*, Hardwicke, Linn. Trans. xiv. p. 525;

Temm. Monog. Mammal. ii. p. 289 ; Blyth, Journ. Asiat. Soc. Beng. x. p. 974 ; Kelaart, Prodr. Faunæ Zeylanicæ, p. 12 ; Wagner, Suppl. Schreb. Säugeth. v. p. 688 ; Horsfield, Catal. Mammal. Mus. E. I. Comp. p. 41 ; Dobson, Proc. Asiat. Soc. Beng. Aug. 1872, p. 153.

*Taphozous bicolor*, Temm. *l. c.* p. 290.

*Taphozous fulvidus* et *brevicaudus*, Blyth, Journ. Asiat. Soc. Beng. x. p. 975.

*Taphozous cantori*, *id.* xi. 784.

The gular sac is large and well-developed, though not so large as in *T. saccolæmus* ; in the female it is represented by a rudimentary fold of skin and nakedness of the integument in the same situation. Radio-metacarpal pouch moderately developed. Inner margin of ear smooth, not papillate ; ears about same size as in *T. saccolæmus*. Wings from the ankles.

The fur of the head extends upon the face slightly in front of the eyes ; the muzzle is almost quite naked ; the inner side of the ear-conch is rather thickly covered with moderately long, fine hair ; posteriorly the ear is almost naked, but a few fine hairs are ranged along the outer margin ; the tragus is quite naked. On the upper surface the fur of the body extends upon the wing-membrane as far as a line joining the middle of the humerus and femur ; posteriorly the interfemoral membrane is covered as far as the point of exit of the tail, along which some long fine hairs extend ; the remainder of the interfemoral membrane is clothed with very short, almost invisible fur, which extends along the tibiæ to the feet, becoming longer on the terminal phalanges of the toes.

Beneath, the fur in front of the gular pouch, under the chin, is very short, and the skin there almost naked ; the antebrachial membrane is covered with longer fur than upon the upper surface ; on the wing-membrane the fur of the body extends more densely and further outwards than on the upper surface, being limited by a line joining the distal and middle thirds of the humerus and femur, but a narrow band of hairs extends outwards to the carpus ; posteriorly the interfemoral membrane is naked, except at the root of the tail.

Fur varying from reddish-brown to black, above and beneath, the bases of the hairs white.

Upper incisors small and very slender in some individuals, in the greater number of specimens absent.

Length : head and body 3''·1 ; tail 1''·15 ; head 0''·95 ; ear (anteriorly) 0''·8, tragus 0''·25 ; forearm 2''·45 ; thumb 0''·3 ; second finger 4''·2 ; fourth finger 2''·15 ; tibia 0''·95 ; calcaneum 0''·85 ; foot and claws 0''·45.

*Hab.* Indian peninsula, Ceylon, Burmah.

Abundant about Calcutta and in all the southern parts of the Indian peninsula ; not yet recorded from Northern India, nor from the Himalaya.

The colour of the fur varies very much. Among a large collection of specimens taken at the same place, one may be found with reddish-brown fur, the others blacker. In all cases, however, the base of the fur is white, and the darker-coloured individuals are generally females.

This species very closely resembles *T. perforatus*, Geoff., and may yet be shown to be a variety only of that species. The number of specimens of both species in the Museums at present is not sufficient to decide the question.

Type in the collection of the British Museum.

#### 6. TAPHOZOUS MAURITIANUS.

*Taphozous mauritanus*, Geoffroy, Descript. de l'Egypte, ii. p. 127; Temm. Monogr. Mammal. ii. p. 291; Wagner, Suppl. Schreb. Säugeth. v. p. 685.

*Taphozous leucopterus*, Temm. l. c. p. 284.

Inner margin of the ear indistinctly papillate; tragus naked, with a distinct angular projection near the base of its outer margin. Gular sac distinct in males, rudimentary in females, the throat being naked only in the position of the sac. Radio-metacarpal pouch smaller than in *T. longimanus*. Wings from the ankles. Feet small.

On the upper surface the face in front of the eyes is covered with short hairs, and the fur of the back extends upon the interfemoral membrane slightly beyond the point of perforation by the tail; beneath, the distribution of fur upon the membrane is similar, but the interfemoral is very thinly covered.

Fur, above, from the base for three fourths its length light buffy-brown, then dark brown with grey extremities; beneath, similar on shoulders and sides of the thorax and neck behind the ears as far back as the origin of the antehumeral membrane, the neck behind the gular pouch and the remainder of the chest and abdomen pure white.

On the upper surface the wing-membrane as far outwards as a line drawn from the ankle to the elbow, and also the antehumeral and interfemoral membranes are brown, the remaining part of the wing-membrane white, except a small ill-defined patch of brown inside the first phalange of the longest finger; beneath, all the membranes are white.

Length (of an adult male): head and body 3''·1; tail 1''·0; ear (anteriorly) 0''·8, tragus 0''·25; forearm 2''·4; thumb 0''·3; second finger 4''·0; fourth finger 2''·2; tibia 0''·85; foot and claws 0''·45.

*Hab.* Africa (eastern and western coasts), Madagascar, Bourbon and Mauritius Islands. In Africa probably limited to the tropical and subtropical regions.

Type in the collection of the Paris Museum.

#### 7. TAPHOZOUS NUDIVENTRIS.

*Taphozous nudiventris*, Cretzschmar, in Rüpp. Atlas Reise nördl. Afrika, Säugeth. p. 70, fig. 27 *b* (1826); Temminck, Monogr. Mammal. ii. p. 280; Wagner, Suppl. Schreb. Säugeth. v. p. 684.

Inner margin of ears papillate in upper third: muzzle naked, very pointed; a small but distinct throat-sac in the male, in the female rudimentary, represented by a slight fold of skin and nakedness of the integument. Radio-metacarpal pouch very small. Wings



from the tibiæ. Backs of toes with long hairs almost as long as in the species of *Molossi*. Fur covering the body very short, white at the base, the extremities dark-brown.

In front the fur of the head does not extend beyond the frontal depression, and the muzzle is nearly naked; the ear-conch has a few fine hairs on its inner side only, tragus naked. The fur of the back is limited laterally and posteriorly by a well-defined line beyond which the finest hair does not pass; it does not extend upon the wing or interfemoral membranes, and the humerus, forearm, and antebrachial membranes are quite naked; posteriorly the terminal line of hair is separated from the point of exit of the tail by a considerable distance; beneath, the throat is nearly naked; the wing-membrane is covered as far as a line drawn from the middle of the humerus towards the pubis, and a band of fine hairs extends outwards posterior to the forearm to the carpus; the lower part of the abdomen, the legs, and the interfemoral membrane are quite naked.

In this species large collections of fat surrounding the root of the tail and extending between the thighs are found in many specimens, especially in those taken during the hibernating season. This appears to be a provision for sustaining life during the cold season, and would seem to indicate that this is the most northerly species of the genus; for I have not observed similar deposits of fat in the body of any of the other species, which all inhabit tropical or sub-tropical regions. Similarly large deposits of fat are found in *Rhinopoma* alone, which inhabits the same countries with this Bat.

Length (of an adult ♀): head and body 3''·7; tail 1''·6; ear 0''·85, tragus 0''·25; forearm 2''·95; thumb 0''·45; second finger—metacarp. 2''·55, 1st ph. 1''·1, 2nd ph. 1''·2; fourth finger 2''·8; tibia 1''·2; foot and claws 0''·6.

*Hab.* North-Eastern Africa (Egypt, Nubia); Asia Minor (Palestine).

Type in the collection of the Frankfort Museum.

7a. *TAPHOZOUS NUDIVENTRIS*, subsp. *KACHHENSIS*.

*Taphozous kachhensis*, Dobson, Journ. Asist. Soc. Beng. 1872, p. 221.

Very similar to *T. nudiventris* in general form and in the distribution of the fur, but distinguished by the absence of the gular sac in both male and female; in the male the usual position of the sac is indicated by a small semicircular fold of skin and nakedness of the integument; in the female the surface is smooth. The measurements are also slightly different; but the general resemblance to *T. nudiventris* is so close that I hesitate to class it as a distinct species.

Length (of an adult ♀): head and body 3''·6; tail 1''·25; ear 0''·9, tragus 0''·25; forearm 2''·95; thumb 0''·45; second finger—metacarp. 2''·7, 1st ph. 1''·1, 2nd ph. 1''·3; fourth finger 2''·7; tibia 1''·1; foot and claws 0''·65.

*Hab.* Kachh, N. W. India.

Type in the collection of the Indian Museum, Calcutta.

II. *No radio-metacarpal pouch; lower lip divided in the centre of its upper surface, and in front by a deep narrow groove.*

Subgenus 2. TAPHONYCTERIS.

8. TAPHOZOUS SACCOLÆMUS.

*Taphozous saccolaimus*, Temminck, Monogr. Mammal. ii. p. 285. pl. 60.

*Taphozous crassus*, Blyth, Journ. As. Soc. Beng. xiii. p. 491.

*Taphozous pulcher*, Elliot, l.c. p. 492.

Ears shorter than the head; tragus concave on outer surface, upper margin regularly convex, margined posteriorly by a fringe of fine hairs; inner margin of the ear-conch smooth, not papillate; gular sac well developed in both male and female, but much larger in the male; lower lip with a deep narrow groove in the centre of its upper surface and in front. No radio-metacarpal pouch. Wings from the ankles.

On the upper surface the fur of the body scarcely extends upon the wing-membrane, the line of attachment of which seems to limit its extent; posteriorly the fur terminates, as on the sides, in a well-defined line limited by the root of the tail; the interfemoral membrane and the legs are quite naked, the feet are also naked, thus differing from the greater number of, if not from all, the species of the genus. Beneath, the chin and sides of the gular sac are covered with very short hair, the thorax and abdomen with moderately long fur, as on the upper surface; the antebrachial membrane has a few fine hairs; and the wing-membrane is covered as far as a line joining the middle of the humerus and the femur, a line of fur passing outwards to the carpus and occupying a considerable triangular patch of membrane there between the forearm and fifth metacarpal bone.

Fur, above, white at the base, the greater part of the hairs dark-brown, the surface mottled with small irregular white patches; beneath, reddish brown.

Length: head and body 3"·5; tail 1"·3; ear 0"·8, tragus 0"·23; thumb 0"·5; second finger—metacarp. 2"·75, 1st ph. 1"·15, 2nd ph. 1"·2; fourth finger 2"·65; tibia 1"·2; foot and claws 0"·65.

*Hab.* Lower Bengal (Sylhet); Burma; Malay peninsula; Sumatra; Java.

Type in the collection of the Leyden Museum.

9. TAPHOZOUS AFFINIS.

*Taphozous affinis*, Dobson, Ann. Mag. Nat. Hist. 1875, xvi. p. 232.

Ears shorter than the head; inner margin of the ear-conch not papillate, tragus rather short, almost quite circular above, outer surface concave. Lower lip with a deep narrow groove in the centre of its upper surface. Male with a large gular sac, as large as in *T. saccolæmus*, rudimentary in the female, the margins of the sac alone developed.

No radio-metacarpal pouch. Wings from the ankles; fur, above,

black, the bases of the hairs white; beneath wholly pure silky white as in *Vesperugo temminckii*. The integument of the back is white; the antebrachial and interfemoral membranes, and that portion of the wing-membranes between the forearm and third finger, white, while that portion of the wing-membrane between the third and first fingers is black mottled with white along the third finger; beneath, the wing-membrane is pure white from the sides of the body outwards as far as the third finger, beyond which it is coloured as the corresponding part above.

This species is closely allied to *T. saccolæmus*, resembling it in its general structure and in measurements. It is at once distinguished by the pure whiteness of the fur of the thorax and abdomen, and of the wing-membrane (the same in the four specimens preserved in spirit, from which the original description was made), which in *T. saccolæmus* is always some shade of brown. Structurally it is distinguished by the complete absence of a gular sac in the females; for in *T. saccolæmus* a sac exists in the females also, though much less developed than in the males. The margins of a gular sac are well defined in this species; but no cavity exists.

Length: head and body 3''·4; tail 1''·1; ear 0''·9, tragus 0''·25; forearm 2''·9; thumb 0''·5; second finger—metacarp. 2''·8, 1st ph. 1''·2, 2nd ph. 1''·2; fourth finger 2''·5; tibia 1''·0; foot and claws 0''·6.

*Hab.* Labuan. Type in the collection of the British Museum.

#### 10. TAPHOZOUS PELI.

*Taphozous peli*, Temminck, Esq. Zool. sur la côte de Guinée, p. 82.

Ears proportionally smaller and more triangular than in the other species, upper half of the inner margin of the ear-conch papillate; tragus rather short, evenly rounded above as in *T. saccolæmus*. Lower lip with a deep narrow groove. Gular sac very large in males, rudimentary (the margins only defined) in females. No radio-metacarpal pouch.

Fur of the body short, not extending to the membranes; distribution similar to that of *T. nudiventris*.

Above, dark reddish-brown, beneath, a slightly paler shade of the same colour.

Length: head and body 4''·2; tail 1''·2; ear 1''·0, tragus 0''·3; forearm 3''·5; thumb 0''·6; second finger—metacarp. 3''·3, 1st ph. 1''·45, 2nd ph. 1''·45; fourth finger—metacarp. 2''·1, 1st ph. 0''·8, 2nd ph. 0''·45; tibia 1''·3; foot and claws 0''·8.

*Hab.* Africa, Gold Coast (Leyden Museum), Cameroon Mountains (Brit. Mus.), East Africa (Cambridge Mus.).

Type in the collection of the Leyden Museum.